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EXAMINER	
RYMAN, DANIEL J	
ART UNIT	PAPER NUMBER
2616	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/632,303	YONGE ET AL.	
	Examiner	Art Unit	
	Daniel J. Ryman	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-22 and 24-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *30-41* is/are allowed.

6)☒ Claim(s) *2-8,18-20,24-27 and 29* is/are rejected.

7)☒ Claim(s) *9-17,21,22 and 28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Examiner acknowledges Applicant's filing of an RCE on 12 December 2006.

2. Applicant's arguments filed 12 December 2006 have been fully considered but they are not persuasive. On page 11 of the Response, Applicant assets that "Zijderhand discloses an improvement to the ALOHA protocol, in which the master station transmits acknowledgements rather than the full packet, and is able to dedicate a time slot to a substation for transmission of additional packets." While this statement is technically true, Zijderhand is not limited to the aforementioned configuration. In addition to use in the aforementioned configuration, Zijderhand repeatedly states that the inventive reservation system also may be used when the master station is simply acting as a repeater (see e.g. col. 2, lines 22-32, col. 5, lines 56-58, and col. 7, lines 15-18). In the repeater configuration, a station will transmit a packet in a random time slot and listen for a retransmission by the master station to determine if the packet has been successfully received, where the retransmission is also received by all stations in the system (Zijderhand: col. 1, lines 35-48). Zijderhand further discloses an embodiment in which the transmitting sub-station transmits a time slot reservation bit in every packet it transmits to the master station (col. 8, lines 32-42). Taken together, these two teachings disclose a system in which a transmitting station transmits a packet in a random time slot to the master station, where this packet contains a time slot reservation bit; the master station, acting as a repeater, then retransmits this packet to all stations so that the transmitting station can determine if the packet was correctly received and so that the other stations can determine whether the next time slot has been reserved. Examiner

submits that Examiner has relied upon this latter system (i.e. where the master station acts as a repeater) when rejecting the claims rather than the system outlined by Applicant.

3. Applicant further asserts that "it is the master station, and not the substation, itself, that takes the action to dedicate a time slot to a substation by transmitting an indicator field to warn other substations." Again, while this is technically true, Zijderhand also expressly allows for the reservation system to be used when the master station is acting merely as a repeater. In this situation, as outlined above, it is the substations, and not the master station, that will transmit the indicator field to warn other substations.

4. On page 12, Applicant asserts that "the protocol of Zijderhand, which depends on an architecture of substations all transmitting to a master station, [cannot] be combined with the very different CSMA-CA protocol, in which peer stations contend for access, without a master station calling the shots." However, Examiner reemphasizes that although Zijderhand discloses an embodiment in which the master station "calls the shots," Zijderhand also discloses an embodiment in which the master station acts as a repeater. When the master station is acting as a repeater, it is not "calling the shots," such that Zijderhand's disclosed repeater system is more analogous to CSMA-CA than Zijderhand's primary ALOHA system embodiment.

5. Even so, as Applicant recognizes, "CSMA-CA requires that peer stations listen for the transmissions of other peer stations during contention periods, whereas the scheme described in Zijderhand relies on . . . having a station listen for [a retransmission of its original packet from a repeater]." However, one of ordinary skill in the art would recognize that this difference does not impact the throughput benefits that inure from Zijderhand's reservation system. Simply, one of ordinary skill in the art would recognize that the Zijderhand's reservation system would yield

throughput benefits in CSMA-CA, wherein the differences in between Zijderhand's repeater ALOHA system and CSMA-CA would not impact the performance of the Zijderhand's reservation system in a CSMA-CA system. Therefore, Examiner maintains that the one of ordinary skill in the art at the time of the invention would have been motivated to use Zijderhand's reservation system in a CSMA-CA network.

6. In light of the foregoing, Examiner maintains that claims 2-8, 18-20, 24-27, and 29 are obvious in view of the cited prior art.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 2, 19, 24-27, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Zijderhand (USPN 5,629,942).

9. Regarding claim 24, Applicant admits as prior art in a network of stations interconnected by a transmission medium, a method of carrier sense multiple access (CSMA) communication in which a plurality of peer stations desiring to transmit a frame may contend for access to the medium during a contention period (see CSMA-CA protocol on p. 1, line 17-28), wherein the first and second peer stations when they contend for access do so using a carrier sense multiple access protocol comprising listening for transmission by other stations (see CSMA-CA protocol on p. 1, line 17-28). Applicant does not admit as prior art including a contention control field in at least some transmitted frames, the contention control field including contention control

information indicating whether the peer stations have permission to contend during a following contention period; having a first peer station establish a contention-free access interval for transmission of a plurality of frames, wherein the contention-free access interval is established by having the first peer station contend for access during a contention period and successfully gain access to the medium; having the first peer station transmit the plurality of frames with contention control information that informs at least some other peer stations that they are not permitted to contend during contention periods within the contention-free access interval; having at least a second peer station that receives the transmitted frames determine from the contention control information whether the second peer station is permitted to contend during a contention period within the contention-free access interval.

Zijderhand teaches, in a contention-based system (col. 1, lines 55-64), including a contention control field ("time slot reservation bit") in at least some transmitted frames, the contention control field including contention control information indicating whether stations have permission to contend during a following contention period (col. 8, lines 33-42, where a value of 1 indicates that a station has reserved the next time slot whereas a value of 0 indicates that any station may contend for the next time slot); having a first station establish a contention-free access interval (reserve next time slot) for transmission of a plurality of frames (col. 8, lines 33-42, where the sub-station is permitted to keep reserving time slots until it has no more information to send), wherein the contention-free access interval is established by having the first station (sub-station) contend for access during a contention period (vacant time slot) and successfully gain access to the medium (col. 5, lines 40-53, where the substation will only contend for access during vacant timeslots); having the first station transmit the plurality of

frames with contention control information (time slot reservation bit) that informs at least some other stations that they are not permitted to contend during contention periods within the contention-free access interval (the next time slot is reserved) (col. 8, lines 33-42, where the sub-station will transmit a time slot reservation bit in each packet to inform the other stations whether or not they can contend during the next slot); and having at least a second station that receives the transmitted frames determine from the contention control information whether the second peer station is permitted to contend during a contention period within the contention-free access interval (where Zijderhand repeatedly describes that the invention is usable on systems in which the main station merely acts as a repeater, (see e.g. col. 2, lines 22-32, col. 5, lines 56-58, and col. 7, lines 15-18) in which case the second station will receive the transmitted frame and determine from the contention control information whether it is permitted to contend during the next contention period). Zijderhand does this in order to increase the channel throughput (col. 2, lines 50-52).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ the slot reservation system of Zijderhand in the CSMA system of AAPA in order to increase the throughput of the CSMA system. As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to include, in a CSMA system, a contention control field in at least some transmitted frames, the contention control field including contention control information indicating whether stations have permission to contend during a following contention period; to have a first peer station establish a contention-free access interval for transmission of a plurality of frames, wherein the contention-free access interval is established by having the first peer station contend for access during a contention period and

successfully gain access to the medium; to have the first peer station transmit the plurality of frames with contention control information that informs at least some other peer stations that they are not permitted to contend during contention periods within the contention-free access interval; and to have at least a second peer station that receives the transmitted frames determine from the contention control information whether the second peer station is permitted to contend during a contention period within the contention-free access interval.

10. Regarding claim 2, AAPA in view of Zijderhand suggests that if the contention control information indicates a contention-free access, determining if a channel access priority level associated with the frame to be transmitted by the second station is higher than a channel access priority level associated with a last transmitted frame. Simply, AAPA in view of Zijderhand discloses that if the contention control information indicates a contention-free access, a high priority message (category III messages) associated with the frame to be transmitted by the second station is higher will be transmitted regardless of whether the time slot has been reserved (Zijderhand: col. 9, lines 36-46 and col. 10, lines 11-22). Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to determine if a channel access priority level associated with the frame to be transmitted by the second station is higher than a channel access priority level associated with a last transmitted frame when the contention control information indicates a contention-free access in order to permit a high priority message to preempt a low priority message.

11. Regarding claim 19, AAPA in view of Zijderhand discloses that the contention control information is a flag that, when set, indicates contention-free status (Zijderhand: col. 8, lines 32-42).

12. Regarding claim 25, AAPA in view of Zijderhand discloses that the first station transmits all of the plurality of frames (Zijderhand: col. 8, lines 32-42).

13. Regarding claim 26, AAPA in view of Zijderhand discloses that the contention control information that informs other stations not to contend during the contention-free access interval appears in all but the last of the plurality of transmitted frames (Zijderhand: col. 8, lines 32-42).

14. Regarding claim 27, AAPA in view of Zijderhand discloses that contending during a contention period comprises: having stations that are contending listen during a listening period before initiating transmission, wherein the listening period is generally different for different stations, and having a station begin transmitting the frame if activity from other stations is not detected during the listening period (AAPA: p. 1, line 17-28).

15. Regarding claim 29, AAPA in view of Zijderhand discloses that the method of CSMA communication comprises CSMA/CA communication (AAPA: p. 1, line 17-28).

16. Claims 3-8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Zijderhand (USPN 5,629,942) as applied to claim 2 above, and further in view of Huang et al. (USPN 4,663,757), of record.

17. Regarding claim 3, AAPA in view of Zijderhand does not expressly disclose, if the contention control information indicates a contention-free status and the channel access priority level associated with the frame to be transmitted is determined to be higher than the channel access priority level of the last transmitted frame, or the contention control information does not indicate a contention-free status, detecting whether any station in the network of stations intends to contend for access to the medium at a channel access priority level that is higher than the channel access priority level associated with the frame to be transmitted. Rather, AAPA in view

of Zijderhand discloses that the stations will contend for access (Zijderhand: col. 10, lines 32-42). Huang teaches, in a system CSMA system, detecting whether any station in the network of stations intends to contend for access to the medium at a channel access priority level that is higher than the channel access priority level associated with the frame to be transmitted (Huang: col. 5, line 66-col. 6, line 21 and col. 6, lines 28-49 where, if long packets are contending for access, it is determined whether any short packets are awaiting transmission such that the short packets will preempt the long packets). It is implicit that in Huang's network, a high priority packet is not delayed while contending for access with lower priority packets. As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to detect whether any station in the network of stations intends to contend for access to the medium at a channel access priority level that is higher than the channel access priority level associated with the frame to be transmitted if the contention control information indicates a contention-free status and the channel access priority level associated with the frame to be transmitted is determined to be higher than the channel access priority level of the last transmitted frame, or the contention control information does not indicate a contention-free status in order to eliminate the need for high priority packets to be delayed while contending with lower priority packets.

18. Regarding claim 4, AAPA in view of Zijderhand in further view of Huang discloses deferring contention for access to the transmission medium to any such station intending to contend for access at the higher channel access priority level (Huang: col. 5, line 66-col. 6, line 21 and col. 6, lines 28-49 where long packets are deferred if a short packet is awaiting transmission).

19. Regarding claim 5, AAPA in view of Zijderhand in further view of Huang discloses contending for access to the medium during the next contention period if no higher channel access priority level is detected (Huang: col. 5, line 66-col. 6, line 21 and col. 6, lines 28-49 where long packets will contend for access if there are no awaiting short packets).

20. Regarding claim 6, AAPA in view of Zijderhand in further view of Huang suggests signaling an intention to contend at the associated channel access priority level to other stations prior to the contention period, where Zijderhand discloses signaling to other stations prior to a contention period contention information (col. 8, lines 33-42) and Huang teaches using a priority access level to determine the eligibility of a station to contend in a period (col. 5, line 66-col. 6, line 21 and col. 6, lines 28-49). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to signal an intention to contend at the associated channel access priority level to other stations prior to the contention period in order to permit stations to determine prior to a contention period which stations are permitted to contend.

21. Regarding claim 7, AAPA in view of Zijderhand in further view of Huang discloses establishing a delay period corresponding to a random backoff time (Huang: col. 2, line 57-col. 3, line 19 where some of the colliding stations will transmit during the first subset and some will transmit during the second subset such that the actual delay from the collision for a particular unit is random); and monitoring the transmission medium for activity for the duration of the delay period (Huang: col. 2, line 57-col. 3, line 19 where stations determine whether or not a communication channel is in use).

22. Regarding claim 8, AAPA in view of Zijderhand in further view of Huang discloses transmitting the frame if activity is not detected during the monitoring (Huang: col. 2, line 57-col. 3, line 19).

23. Regarding claim 18, AAPA in view of Zijderhand suggests that that the contention control information is observable by substantially all of the stations (AAPA: p. 1, line 17-28 and Zijderhand: col. 6, lines 11-26 and 52-56, where AAPA disclose that all information transmitted on the medium is received by all other stations and Zijderhand discloses that the contention control information is used by the other stations).

However, AAPA in view of Zijderhand does not expressly disclose that the channel access priority level is observable by substantially all of the stations. (Huang: col. 5, line 66-col. 6, line 21 and col. 6, lines 28-49 and Ulug: col. 2, lines 20-37 and col. 2, lines 48-59). Huang teaches, in a system CSMA system, detecting whether any station in the network of stations intends to contend for access to the medium at a channel access priority level that is higher than the channel access priority level associated with the frame to be transmitted (Huang: col. 5, line 66-col. 6, line 21 and col. 6, lines 28-49 where, if long packets are contending for access, it is determined whether any short packets are awaiting transmission such that the short packets will preempt the long packets). It is implicit that in Huang's network, a high priority packet is not delayed while contending for access with lower priority packets, whereas such packets are delayed in Zijderhand (col. 10, lines 32-42). As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to detect whether any station in the network of stations intends to contend for access to make the channel access priority level observable by

substantially all of the stations in order to eliminate the need for high priority packets to be delayed while contending with lower priority packets.

24. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Zijderhand (USPN 5,629,942) as applied to claim 1, and further in view of Karner (PG Pub 2001/0048692), of record.

25. Regarding claim 20, AAPA in view of Zijderhand fails to expressly disclose that the transmission medium is a power line. Karner discloses a power line network that uses a priority method for medium access control (paragraph 15) where it is implicit that this allows power lines to be used as a communication network. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to implement the contention resolution system of AAPA in view of Zijderhand on a power line in order to permit power lines to be used as a communication network.

Allowable Subject Matter

26. Claims 9-17, 21, and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not disclose or fairly suggest detecting, in a priority resolution period immediately prior to the contention period, signaling indicating a channel access priority level of a frame to be transmitted by the at least one other station.

27. Claim 28 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not disclose or fairly suggest that stations are without the capability to listen for transmissions from other stations while they are transmitting.

28. Claims 30-40 are allowed. The prior art does not disclose or fairly suggest detecting, in a priority resolution period immediately prior to the contention period, signaling indicating a channel access priority level of a frame to be transmitted by the at least one other station.

29. Claim 41 is allowed. The prior art does not disclose or fairly suggest that stations are without the capability to listen for transmissions from other stations while they are transmitting.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (571)272-3152. The examiner can normally be reached on Mon.-Fri. 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Daniel J. Ryman
Examiner
Art Unit 2616